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(71) Applicant: NIKON CORPORATION Tokyo (JP)

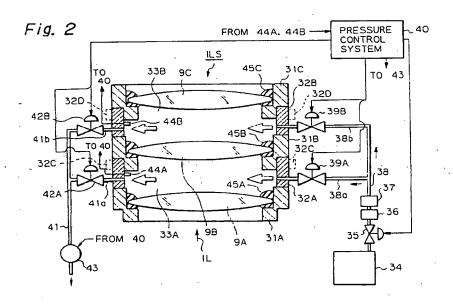
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(54) Exposure apparatus

(57) In the exposure apparatus of the present invention, a sealed chamber (33A) defined by a first lens (9A) and a second lens (9B) in an input lens system (ILS) on a plane of incidence of a fly-eye lens (10) in an illumination optical system is provided. In a gas exchanging step, the impurity gas in the sealed chamber is first exhausted through an electromagnetic valve (42A) provided with a check valve and a gas exhaust pipe (41), using a gas exhaust pump (43) and then, a high-purity nitro-

gen gas is supplied from a gas bomb (34) through a gas supply pipe (38) and an electromagnetic valve (39A) provided with a check valve to the sealed chamber. Using a pressure sensor (44A) provided in the sealed chamber, the gas exchanging step is repeated while maintaining an amount of change in pressure in the sealed chamber within a predetermined allowable range, to thereby reduce the concentration of impurities in the gas in the sealed chamber to a target value:





EUROPEAN SEARCH REPORT

Application Number EP 98 30 2390

	DOCUMENTS CONSIDI	ERED TO BE RELEVANT		·:
Catégory	Citation of document with in of relevant passa	dication, where appropriate,	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.CI.6)
χ	FR 2 708 757 A (FUJ 10 February 1995 (1	ITSU LTD) 995-02-10)	1,5,8, 16, 20-22,24	G03F7/20
A	* page 7, line 27 - * page 9, line 9 - * page 13, line 16 * page 20, line 25 * figures 2-4,6,9 * -& US 5 696 623 A (9 December 1997 (19	page 12, line 14 * - page 14, line 1 * - line 35 * ARUGA TAKASHI ET AL)	2,3,23	
Α	1 May 1990 (1990-05	 HITAKE YASUHIRO ET AL) -01) - column 6, line 59 *	11	
A -	US 5 559 584 A (MIY 24 September 1996 (* column 5, line 10 * figures 1,2 *	1996-09-24)	11	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
A	EP 0 742 492 A (CAN 13 November 1996 (1 * page 9, line 29 - * figure 4 *	996-11-13)	11	G03F
				
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		*		
	The present search report has	been drawn up for all claims		
	Place of search	Date of completion of the search 9 March 2000	טבו	Examiner
X:pa Y:pa dox A:teo O:no	THE HAGUE CATEGORY OF CITED DOCUMENTS rticularly relevant if taken alone rticularly relevant if combined with anot sument of the same category shoological background in-written disclosure ermediate document	T: theory or princi E: earlier patent d after the filing d b: document cited L: document cited	ple underlying the ocument, but publi ate d in the application	shed an, or



Application Number

EP 98 30 2390

CLAIMS INCURRING FEES	*										
The present European patent application comprised at the time of filing more than ten	claims.										
Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):											
No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.											
LACK OF UNITY OF INVENTION											
The Search Division considers that the present European patent application does not requirements of unity of invention and relates to several inventions or groups of inventions.											
	·.										
see sheet B											
All further search fees have been paid within the fixed time limit. The present been drawn up for all claims. As all searchable claims could be searched without effort justifying an additional fee.											
Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:											
1-3, 5, 8, 11-16, 20-24											
	·										
None of the further search fees have been paid within the fixed time limit. The report has been drawn up for those parts of the European patent application first mentioned in the claims, namely claims:	which relate to the invention										
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LACK OF UNITY OF INVENTION SHEET B

Application Number EP 98 30 2390

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1-3, 5, 8, 16, 20-24

Control of gas exchange using illumination system pressure sensor.

2. Claim: 4

Definition of sealed chamber for gas exchange using shaping optical system.

3. Claim: 6

Location of sealed chamber for gas exchange where illuminance is high.

4. Claims: 7, 17-19

Location of sealed chamber for gas exchange in input lens system.

5. Claim: 9

Periodic gas exchange during idling of exposure apparatus.

6. Claim: 10

Periodic gas exchange during assembly and adjustment of exposure apparatus.

7. Claims: 11-15

Gas exchange in substantially stationary pressure state.

8. Claims: 25, 26

Control of gas exchange according to change in light transmittance of optical system.

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 98 30 2390

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European scarch report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

09-03-2000

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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